

SMITHSONIAN ZOOGOER

For members of **FRIENDS OF THE NATIONAL ZOO**
NOV. | DEC. | 2011

One **ROARING** Year

our lion cubs' first year
was adorable, incredible—
and never dull.

- » Heart Disease
in Apes
- » The Science of
Pregnancy
- » Wild Holiday Gifts



Good day.

Great day.

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One Roaring Year

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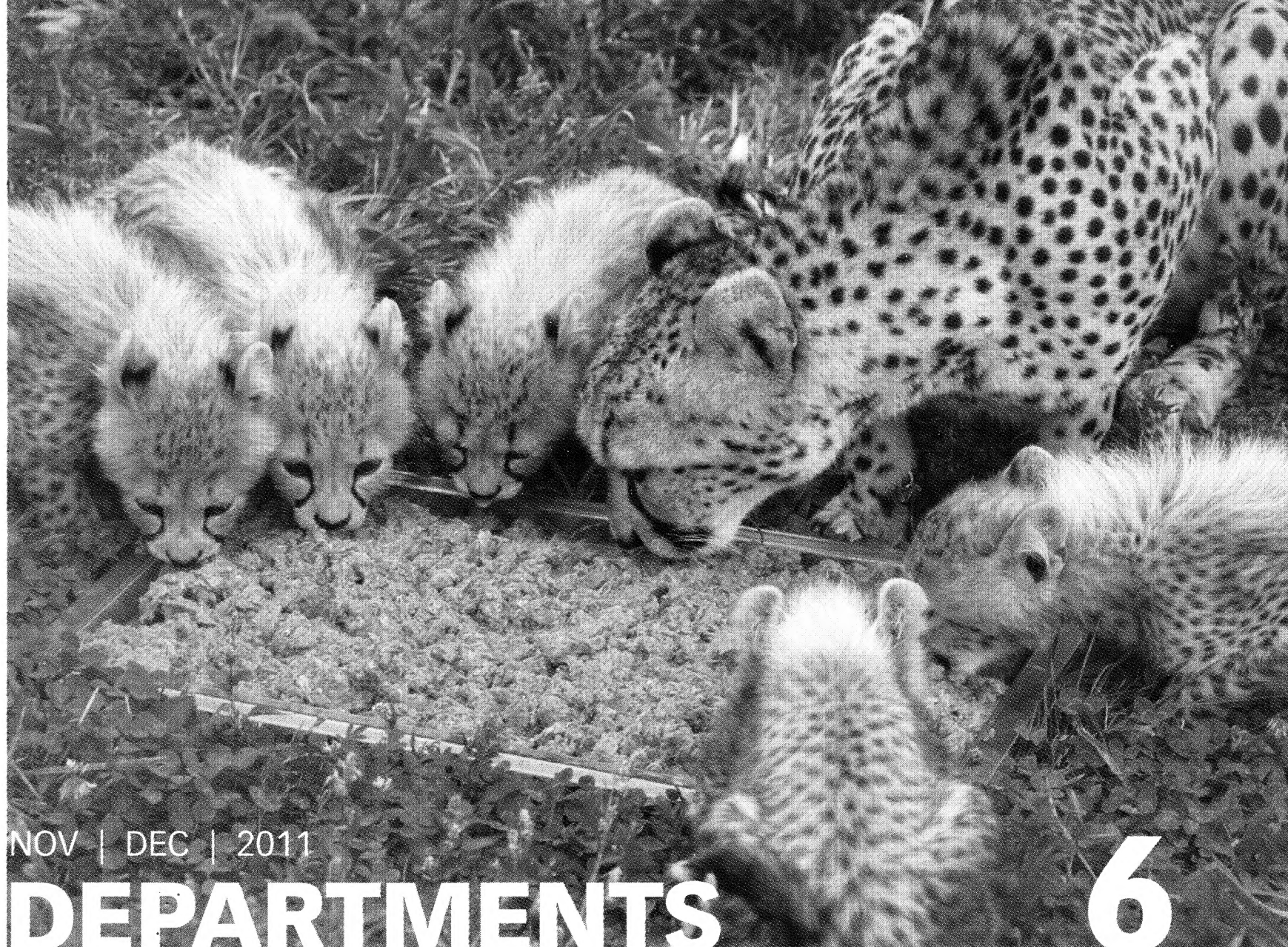
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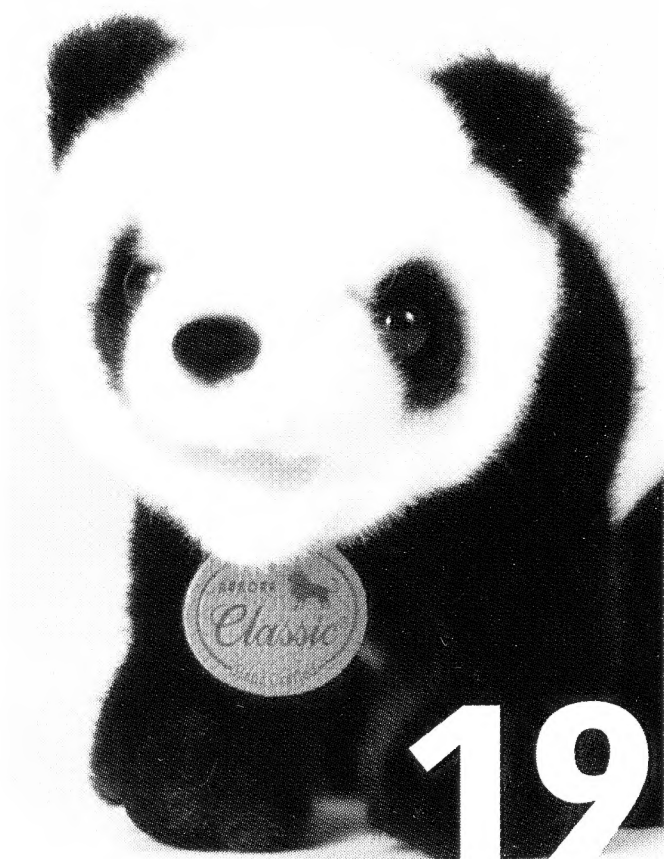


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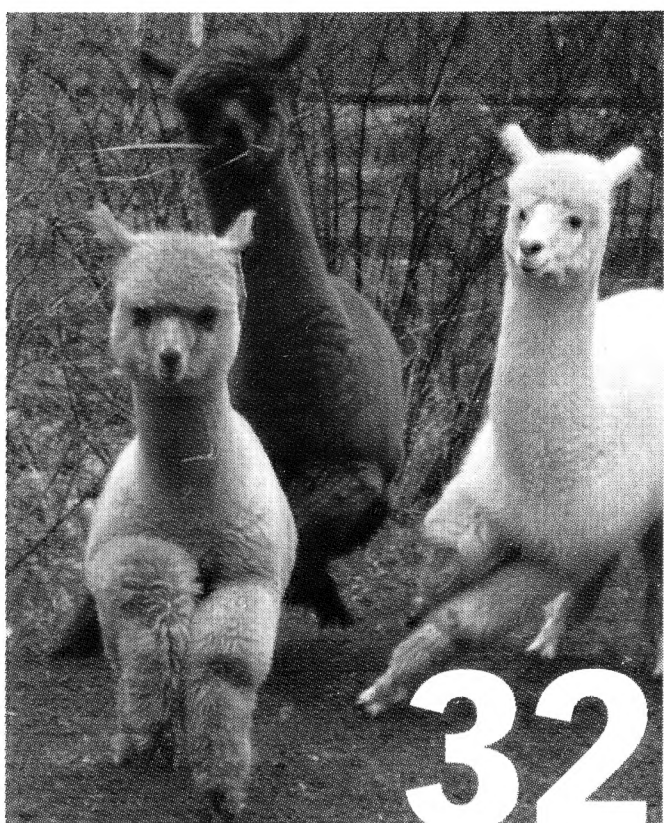
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MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP

SMITHSONIAN Zoogoer



is the dedicated partner of the Smithsonian's National Zoological Park. FONZ provides exciting and enriching experiences to connect people with wildlife. Together with the Zoo, FONZ is building a society committed to restoring an endangered natural world. Formed in 1958, FONZ was one of the first conservation organizations in the nation's capital.

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On the cover: One of Luke's cubs enjoys playtime with papa.
PHOTO BY MEHGAN MURPHY/NZP

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WELCOMING CHANGING SEASONS

AS THE TEMPERATURES DROP, so does the number of visitors to the Zoo. People seem to connect visiting the Zoo with the spring. Allow me, however, to present another idea as we move through the cool of autumn and chill of winter.

We are, in my view, now entering two of the very best seasons to visit the Zoo. Here's why. Shorn of the spring and summer crowds, this time of year offers some special delights for Zoo visitors: the opportunity to look more closely, the chance to encounter knowledgeable staff and Zoo guides more readily, and the ability to pause and move through exhibits at your own pace. Cold-weather visitors often say, "I had my best visit."

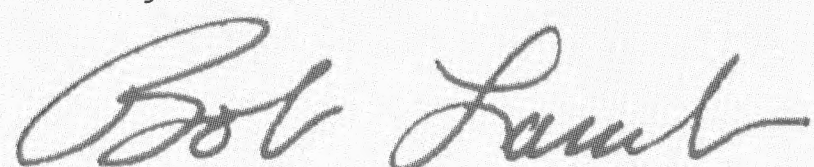
Here are five suggestions for warm, wonderful outings you should consider:

- Visit the river and rainforest animals of Amazonia, one of the Zoo's largest and most complex exhibits. Explore the freshly replanted and refurbished rainforest, marvel as titi monkeys leap among the branches, and see if you can spot the sloth.
- Drop by Think Tank for a fascinating glimpse into the world of animal and human cognition. Match your memory skills against those of an orangutan, and meet our new Norwegian rats. Cute and social, they may even have you rethinking your views about rodents.
- Stroll over the bridge to the Bird House and experience some of the most dazzling colors in nature's palette. Don't miss the Indoor Flight Room, where a parrot, a bluebird, a dove, and ten other species fly free around you.
- Say hello to the naked mole-rats, golden lion tamarins, and other fascinating inhabitants of the Small Mammal House. Scientists now believe that the genes of naked mole-rats may hold new, important possibilities for improving human health.
- Be sure to visit the Reptile Discovery Center to meet the world's largest gecko (which grows like a dog), the gorgeously green Fiji Island iguana, and a host of other newly acquired animals.

Then, of course, there's the biggest, brightest reason to come to the Zoo this season—ZooLights! Our fifth annual holiday festival opens Nov. 25 and features more LED lights and more displays, now stretching the whole length of Olmsted Walk; live entertainment; skating; refreshments; animal exhibits; and fun shopping. It's the perfect place to bring your family, your friends, and your out-of-town guests. Discounted event parking is available for FONZ members. And yes, admission is FREE!

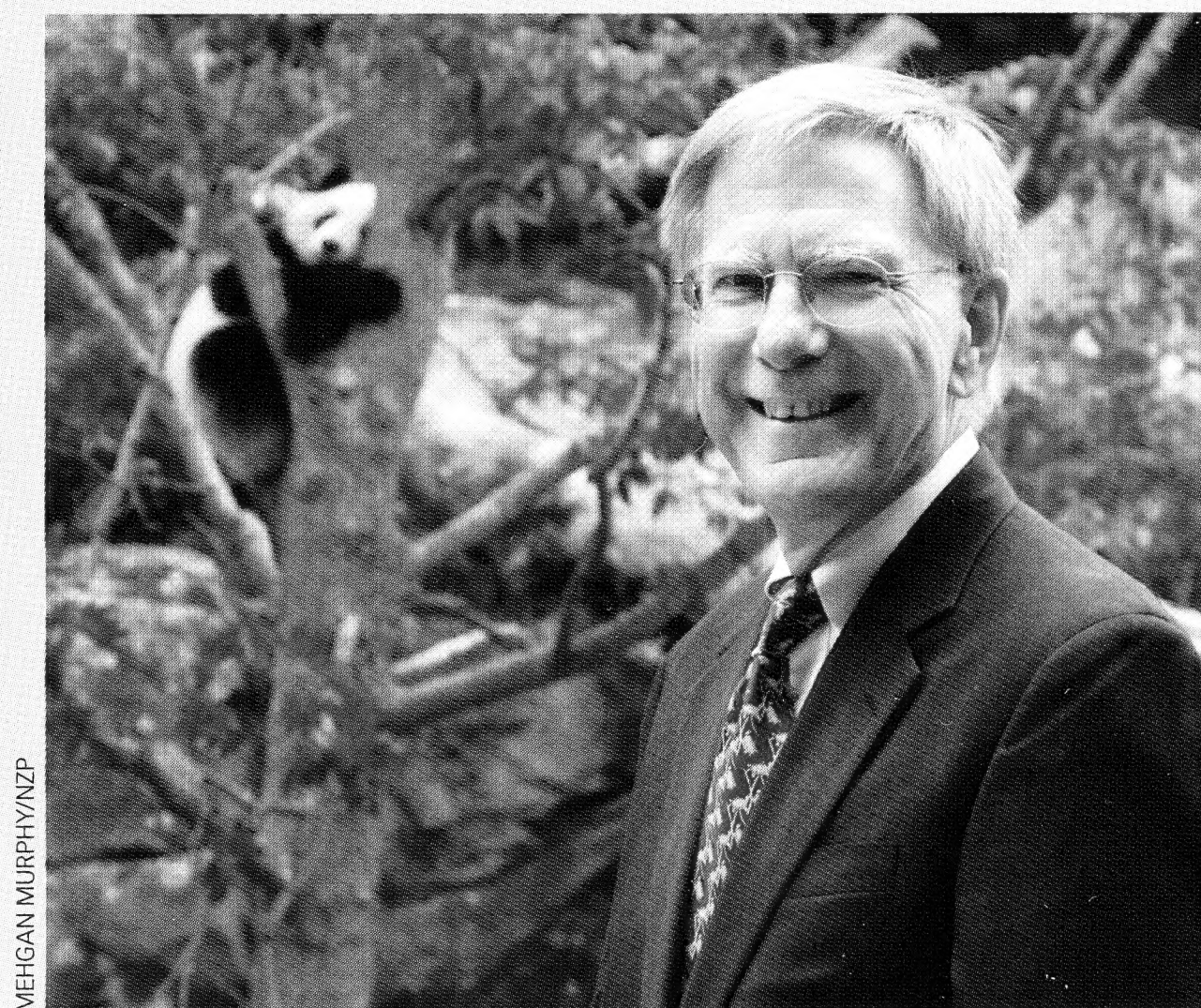
We hope to see you soon.

Sincerely,



Bob Lamb

Executive Director, Friends of the National Zoo



MEHGAN MURPHY/NZP

SOMETHING TO TALK ABOUT



MEGHAN MURPHY/NZP

WHAT IS A ZOO? THAT WAS ONCE A SIMPLE QUESTION TO ANSWER.

A zoo was a place where you went to see animals. Today, though, that easy answer is woefully inadequate. Accredited zoos have grown to become research and education centers that play a critical role in the conservation of endangered species.

Just a glance through this magazine reveals the complex nature of the Smithsonian's National Zoological Park. The Zoo is a Smithsonian Conservation Biology Institute scientist winning presidential acclaim (p. 4), a groundbreaking study on elephant intelligence (p. 7), a pioneering effort to fight heart disease in apes (p. 10), the successful creation of a lion pride (p. 21), and a team of researchers who plumb the mysteries of animal pregnancy (p. 26). And that's just this issue!

The challenge of communicating that complexity falls to Pamela Baker-Masson and her team. They harness almost every medium imaginable to get out the word about the Zoo and its many happenings. Their efforts range from collaborating with the media on stories for broadcast and print to constantly updating the Zoo's vast website to creating press events that draw attention to the Zoo's scientific and conservation accomplishments to tapping the power of social media such as Facebook and Twitter. About the only medium we don't use is semaphore.

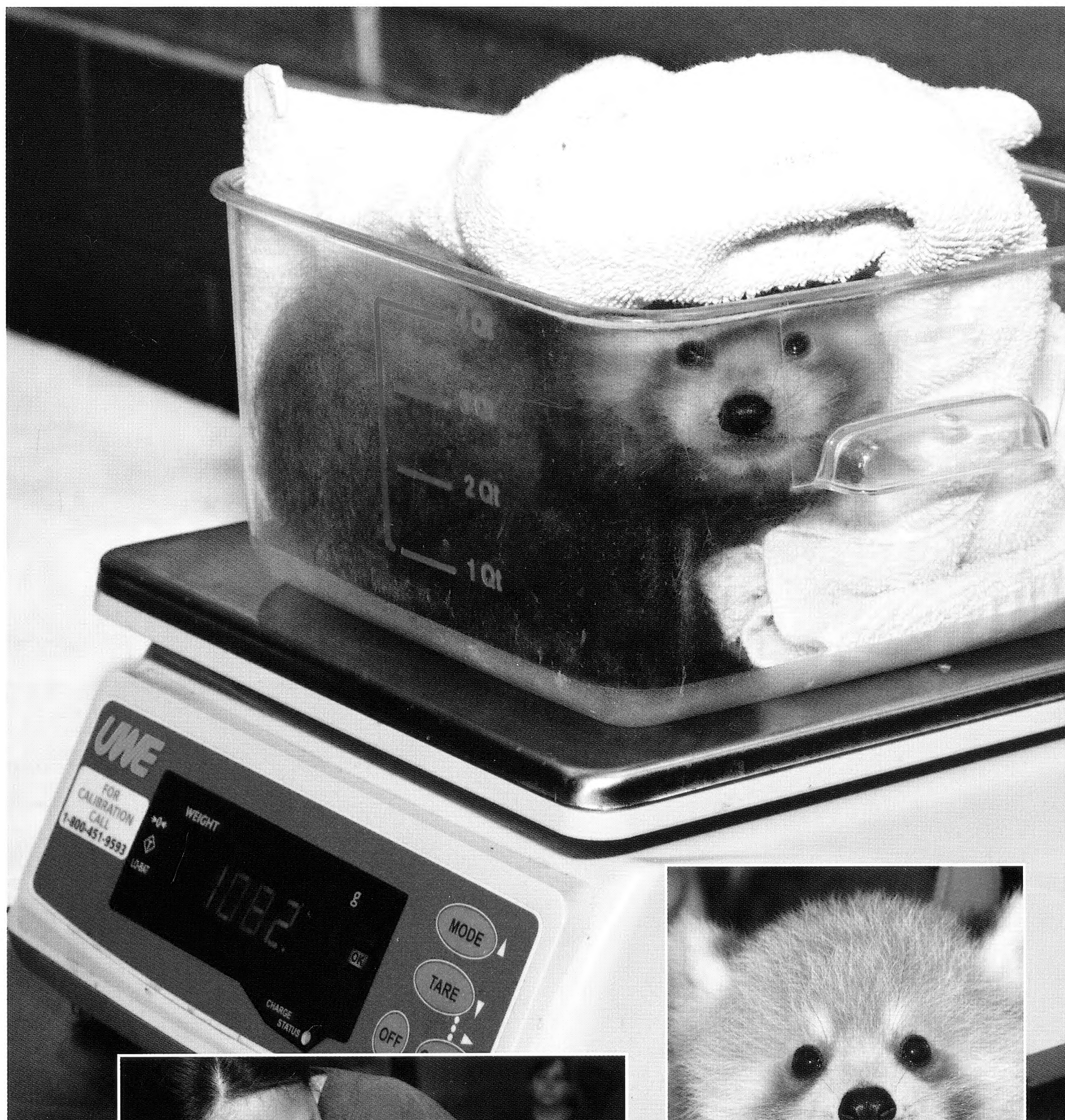
Our communicators do an impressive job and were recently honored with a top industry award (p. 7). They can't do it alone, however. That's why I hope you, as a supporter of the Zoo, will help us tap one of the most powerful of all communications technologies—word of mouth. It's great for someone to learn from the news that cool things are happening at the Zoo. But that information has even more impact when it comes from a trusted relative, friend, neighbor, or colleague.

So I urge you to talk about the Zoo. I hope you'll tell family and friends what it means to you and why. You might even invite them to join you for a visit or a special event—say at ZooLights, which starts on Nov. 25. You'll be doing your friends a favor by (re)introducing them to the myriad delights of the Zoo. And you'll be aiding the Zoo by broadening its base of fans and supporters.

What is a zoo? It's a place where there's always something to talk about.

Sincerely,

Dennis Kelly
Director, Smithsonian's National Zoological Park



Red Panda Update

Four female red panda cubs were born in June, two at Front Royal and two at Rock Creek. All four are doing well. They're active, strong, and capable of producing great vocalizations. Each weighed about three pounds at press time, when the family was on exhibit in the giant panda house. (Their eventual move to the red pandas' outdoor enclosure on Asia Trail depends on the cubs' climbing ability.)

MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP

A Genetic Surprise

Smithsonian Conservation Biology Institute researchers and their collaborators have found something surprising about Central American giant river turtles from different regions. These critically endangered turtles should have little-to-no contact with each other because of various impediments—such as mountains. Nonetheless, many of these geographically disparate turtles share similar genetics, implying that they have been in close contact for years.

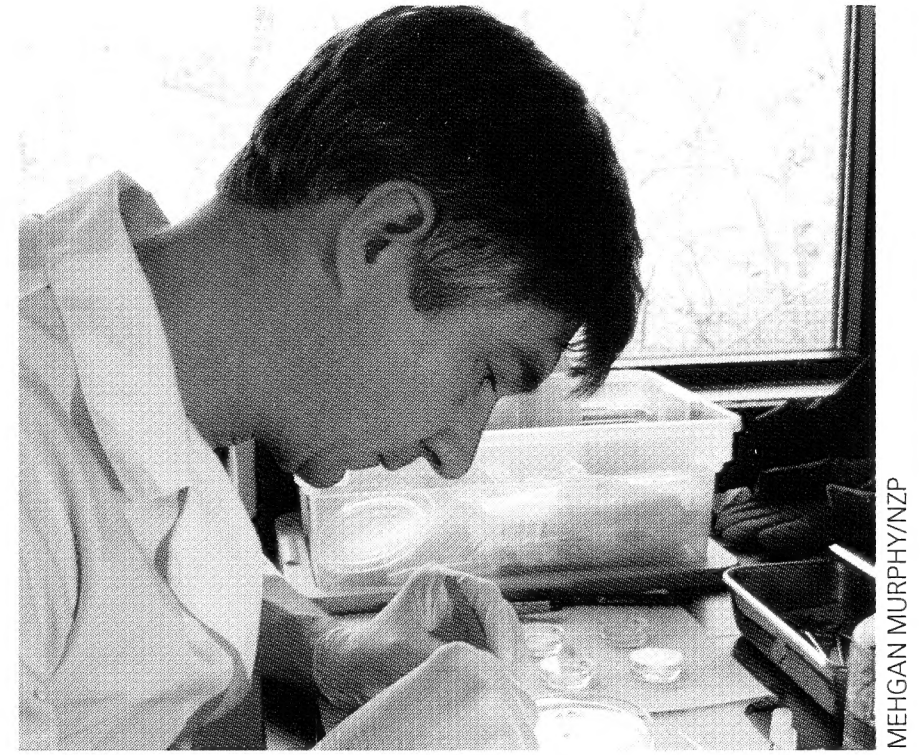
Researchers concluded that the genetic mixing actually stemmed from human activity. Several thousand years ago, the Maya prized the turtles for their meat and used them in rituals. They kept the turtles in ponds and traded them over long distances. As a result, the protein-rich turtles were moved about widely, causing the genetic similarities we see today.

Presidential Prize

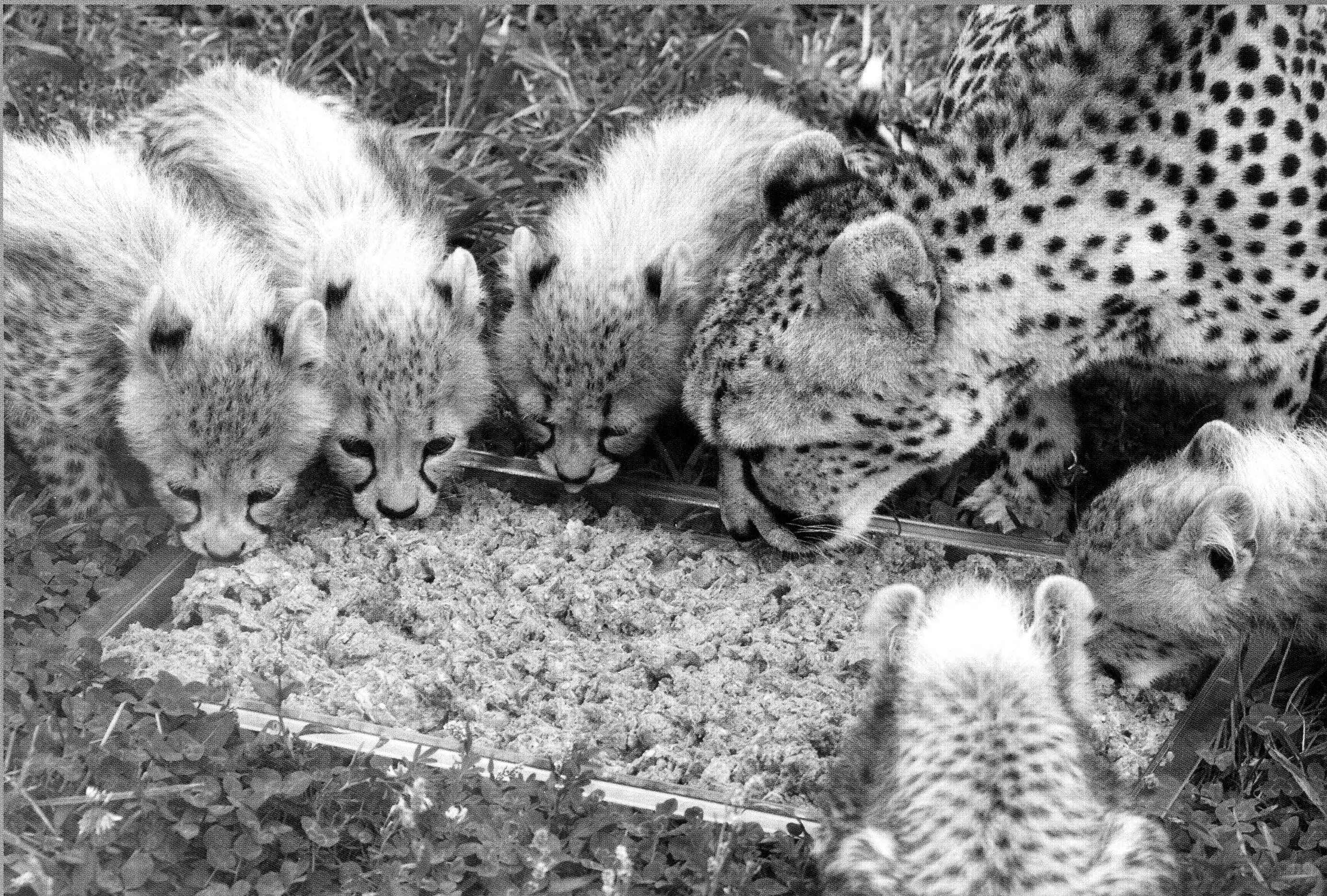
PIERRE COMIZZOLI, a reproductive physiologist at the Zoo's Smithsonian Conservation Biology Institute, was one of 94 researchers chosen to receive Presidential Early Career Awards for Scientists and Engineers. The awards are the highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers.

The awards were established in 1996 by President Clinton and are coordinated by the Office of Science and Technology Policy. Awardees are selected for their pursuit of innovative research at the frontiers of science and technology and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach.

Comizzoli is currently working on the development of procedures for preserving the oocytes (eggs) of rare and endangered felids. He also continues to explore the mysteries of animal reproduction. "Even within wildlife conservation," he says, "reproductive physiology is often forgotten. We need to know more in order to save species for the future."



MEGHAN MURPHY/NZP



MAJOR COMMUNICATIONS AWARD

"A mass extinction more serious than the dinosaurs" is ravaging Central and South America, says Pamela Baker-Masson, the Zoo's associate director of communications. The culprit is a fungus known as chytrid, which undermines the cardiovascular health of frogs and other amphibians. It is wiping out whole species.

Drawing attention to this wildlife crisis has been a priority—and a passion—for the Zoo's communications team. Lindsay Renick Mayer spearheads the effort to draw attention to both the plight of amphibians and the work of the Panama Amphibian Rescue and Conservation Project, which is creating captive populations of imperiled frog species.

The team's work has earned the prestigious PR News Platinum Award in the public affairs category. That's the industry equivalent of an Oscar. Baker-Masson and Renick Mayer collected the award at a luncheon in New York.

You can learn more about the amphibian crisis and responses to it at amphibianrescue.org.



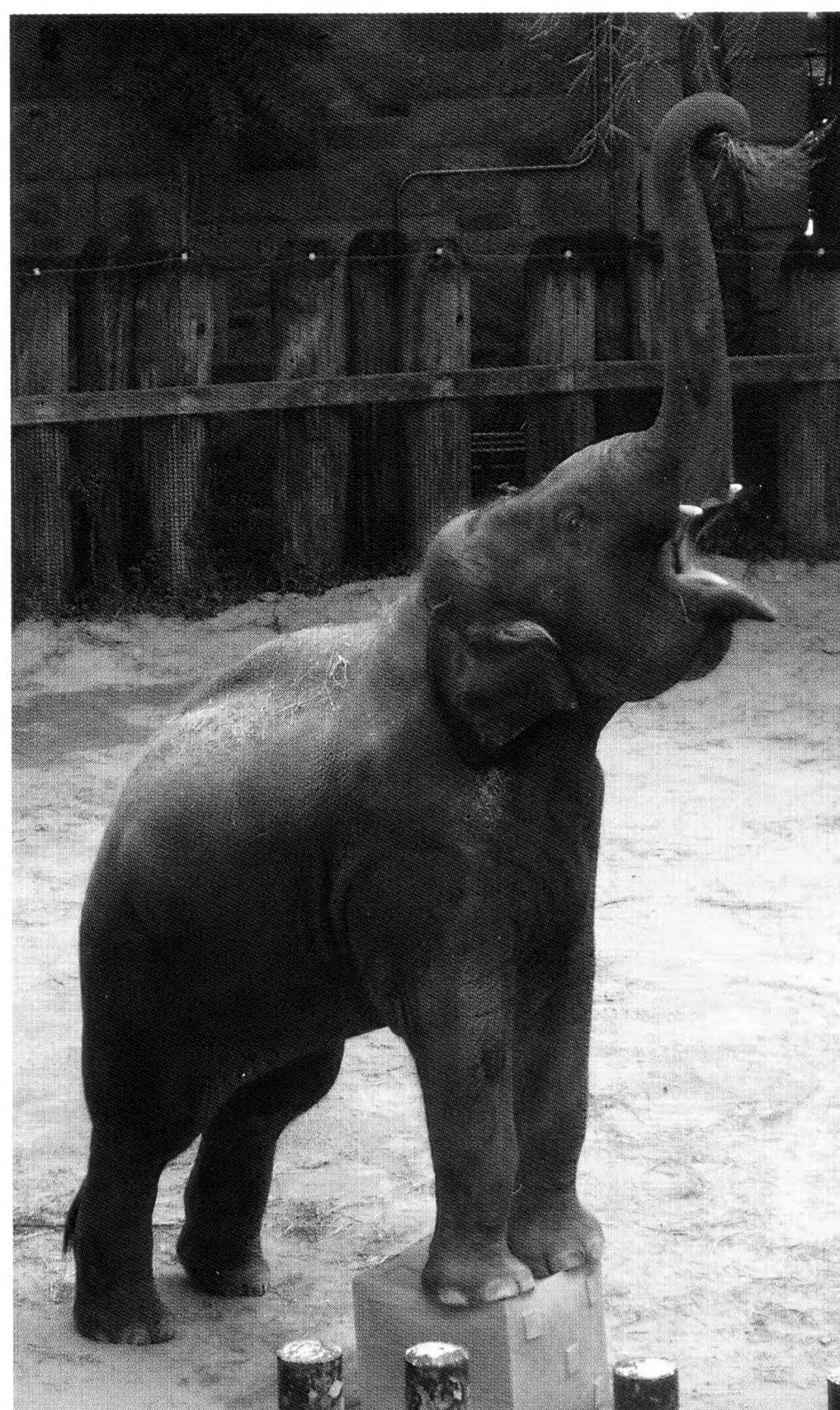
MEGHAN MURPHY/NZP

Two Cheers for Cheetahs

Two news items from Front Royal have brought hope for cheetah lovers at a time when the spotted cats are having trouble reproducing in North American zoos.

The first bit of encouraging news is that the Zoo's latest litter of cheetah cubs, born on May 28, is doing well. The fluffy, ferocious cubs are growing steadily and eating meat. Their mother, six-year-old Amani, is proving a skilled parent. As they grow, the cubs are becoming increasingly adventurous and using more of their yard. They seem especially to like climbing on rocks and logs while exploring the world around them.

The second story stems from research led by Adrienne Crosier, a cheetah biologist at the Zoo's Smithsonian Conservation Biology Institute. Crosier and colleagues studied potential reasons for the decline of reproductive success among older female cheetahs. They found that a cheetah's uterus degrades in quality as she ages—but that her eggs do not. This finding raises the possibility of harvesting eggs, fertilizing them, and implanting them in the womb of a younger cat. That way, the older cat's eggs can contribute to cheetahs' genetic diversity.



PRESTON FOERDER, FOERDER/REISS CUNY

Elephant Intelligence

While known to be intelligent, elephants have traditionally fared poorly on tests that aimed to assess their ability to solve problems spontaneously. That changed when a group of researchers evaluated Kandula, the Zoo's nine-year-old male. The team included elephant keeper Marie Galloway, elephant curator Tony Barthel, and associate director for animal care sciences Don Moore.

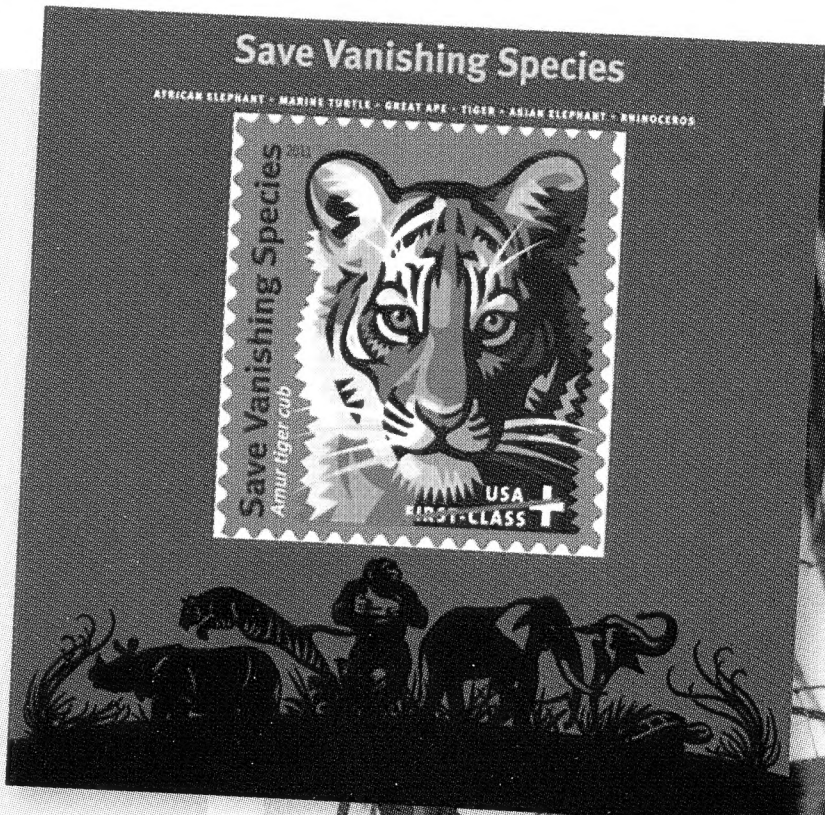
The researchers first placed some fruit out of reach. Then they gave Kandula bamboo sticks that he could use to get the fruit. He showed no interest in doing so. The team then gave Kandula a movable block. He could position it and stand on it to obtain the fruit.

Kandula had never been trained to stand on the block, nor had he been taught to move objects. Nonetheless, he repeatedly moved the block into the correct position and used it to reach the fruit. He then did the same with a tractor tire and other objects. Presented with smaller items, Kandula stacked them to create a platform he could climb to get his treat.

Kandula's unparalleled performance on the tests brought him tasty fruit to enjoy—and it gave scientists plenty of food for thought.

CONSERVATION STAMPS

The U.S. Postal Service is helping to save vanishing species—11 cents at a time. It has launched a series of Save Vanishing Wildlife stamps, featuring tigers, African and Asian elephants, rhinos, great apes, and marine turtles. Each stamp sells for 55 cents, or 11 dollars for a sheet of 20. The extra revenue will be transferred to the U.S. Fish and Wildlife Service to support international conservation efforts. The tiger stamp was dedicated at the National Zoo’s Great Cats exhibit on September 20, 2011.



MEGHAN MURPHY/NZP

Your can order Save Vanishing Species stamps at tigerstamp.org.

Mark Your Calendar

- Nov. 17

An Evening for Elephants
Keepers, veterinarians, reproductive scientists, and FONZ volunteers provide firsthand accounts of working with elephants. Six-thirty p.m. in the Visitor Center auditorium. Learn more at fonz.org/elephantevening.htm.
- Nov. 25 – Jan. 1

FREE: ZooLights
Our annual, earth-friendly extravaganze is bigger and better than ever. Learn more at fonz.org/zoolights.htm
- Dec. 25

Christmas Day
The Zoo will be closed.

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Friends of the National Zoo

snow safari DAY CAMP

A WILD NATURE EXPLORATION FOR CHILDREN IN GRADES K-5. Just because it's winter doesn't mean you need to hibernate. The National Zoo's animals are ready to romp—and we are ready for you! Snow Safari campers will explore the lives, habitats, and conservation of animals around the world. Each four-day session includes exciting hands-on activities, craft projects, and science experiments. Participants will also meet Zoo experts, go on exclusive tours, and experience private animal encounters. (Please note: There is never direct contact with the animals.) There's "snow" doubt about it! Snow Safari Day Camp is the coolest way to spend your winter vacation.

Program Options for Grades K-1

WHERE THE WILD THINGS ARE

A wonderful world unfolds in this four-day investigation of the animal kingdom. Each day, kids study a different animal and learn about its home. Join the adventure, max out on fun, and become king of the wild things.

PURR OR GROWL

The Zoo is always purring with excitement! Learn about your favorite felines through Zoo walks, science projects, and purr-fect crafts. Lions, tigers, cheetahs, and more—missing out would be a cat-astrophe!

Program for Grades 2-5

EXTREME ANIMALS

Animals are built for survival. They can live deep in the sea, buried in snow, or in the driest desert. Get answers to your extreme animal questions and discover the roughest, toughest, fastest, and strongest animals alive. This camp will surely earn a gold medal in fun!

AGES

Campers are grouped into two grade levels: K-1 and 2-5. Snow Safari is not offered at the pre-K level. Children may only be registered for their current grade level.

DATES/TIMES

Sessions are held Dec. 27-30, from 9 a.m. to 3 p.m. Campers must be dropped off between 8:45 and 9 a.m. After-Camp Care is offered in the Visitor Center classrooms from 3 to 6 p.m. for an additional fee. Space in After-Camp Care is limited and not guaranteed.

FEES

A current FONZ household membership or higher is required to participate.

CAMP SESSION: \$280

AFTER-CAMP CARE: \$100

After-Care is held in the Visitor Center classrooms from 3-6 p.m. An additional fee will be charged at 6 p.m.

LOCATION

All classes are held in the Visitor Center classrooms. Please pick up campers in parking lot A. Campers in After-Camp Care must be picked up in the Visitor Center classrooms.

REGISTRATION

Registration begins November 8 at 10 a.m. To register, go to fonz.org/camps.htm. All confirmation materials will be sent via email upon registration.

CANCELLATION POLICY

Cancellation requests received at least four weeks before the session will receive a 75 percent refund. Please email the FONZ Snow Safari Day Camp office at FONZ_programs@si.edu. No refunds will be made for less than four weeks' notice.

Space in Snow Safari Day Camp and After-Care is limited!



ANN BATDORF/NZP

THE heart OF THE MATTER

by JAVELLE MCINTOSH

**Cardiac problems are
a leading killer for gorillas
and other apes.**

Veterinary researchers are
striving to learn why.

ANN BATDORF/NZP





FACING PAGE: Kuja, a male lowland gorilla, died of heart disease in 2006.
THIS PAGE: A veterinary team works to place a pacemaker in Kuja's chest.

THE **heart** OF THE MATTER

Veterinarians and great apes staff at the Smithsonian's National Zoo still vividly remember the painful events of July 2006.



MEGHAN MURPHY/INZQ

On July 1 of that year, 23-year-old Kuja, a male western lowland gorilla, lay on the operating table. He was desperately sick with a failing heart. Visiting surgeons from Alabama implanted an advanced pacemaker in his chest in an effort to control the rate and rhythm of his heart and restore cardiac function. But Kuja's disease had progressed too far, and he died on the operating table.

Two days later, the Zoo's second silver-back gorilla, 34-year-old Mopie, collapsed and died in the Great Ape House. Mopie too had been diagnosed with heart disease many years earlier, but his signs of disease were much less overt.

Both gorillas succumbed to the same illness, but it unfolded quite differently in each case. That added to the heartbreak and mystery surrounding this severe and increasingly prevalent ailment. And it galvanized the National Zoo to take a leading role in investigating heart disease in primates.

Kuja's and Mopie's deaths were not isolated tragedies. At zoos across the country, male gorillas' hearts were giving out—and no one knew why. For the past decade, a dedicated group of veterinarians, pathologists, and cardiologists who treat human heart disease have painstakingly collected data on captive gorillas in hopes of finding answers. This research effort has evolved into the Great Ape Heart Project, which brings together experts to study heart disease in all four species of great apes: gorillas, chimpanzees, orangutans, and bonobos.

While the key to preventing heart disease in apes remains elusive, some important clues are emerging. In the meantime, specialists have made great strides in prolonging the lives of animals already diagnosed.

Uncovering an Epidemic

For decades, there had been scattered reports of gorillas dying from heart disease. But there are relatively few in captivity—about 360 in the United States. So there can be a significant lag time between diagnosing a few cases and recognizing a syndrome, says Suzan Murray, the Zoo's chief veterinarian.

The first indication of a serious problem was a 1994 mortality report compiled by two advisors to the Association of Zoos and Aquariums' Gorilla Species Survival



MEGHAN MURPHY/NZP

A veterinary team performs a procedure on Kigali, one of the Zoo's female gorillas.

Things Known and Unknown

- Heart disease in gorillas is not hardening of the arteries, a problem common among humans. Rather, it most resembles a condition in people caused by high blood pressure. The heart must work harder to pump blood, and over time, this causes the heart muscle to thicken.
- Heart disease is definitely a problem for male gorillas. It can show up in animals as young as eight or ten, but most commonly manifests itself in the 20s. Some victims die quickly; others may live with the disease to a ripe old age. Scientists are still learning why.
- Although the focus has been on male gorillas, female gorillas and the other great ape species (bonobos, chimpanzees, and orangutans) are also dying of heart disease. "At this point, we can't even say it's worst among gorillas, because we're just at the tip of the iceberg," says Hayley Murphy.
- Obesity appears to play a role in gorillas' heart disease. Animals that survive past the point where the disease hits hardest are not as heavy as those that succumb, Pam Dennis has found. She cautions, however, that the data may be skewed. Zoos are likely to perform cardiac exams on those animals they are most worried about, such as the overweight.
- Other risk factors remain a mystery. Researchers are looking into a whole host of possibilities, including genetics, the stress of social interactions among apes, personality types (yes, there are type-A gorillas), and various dietary issues, such as calorie intake, fiber, and salt used in processing biscuits that zoos have fed to apes.
- Some people have suggested that *Afromomum melegueta*, a ginger plant with anti-inflammatory properties that gorillas are believed to eat in the wild, protects against heart disease. But most experts think the answer is not that simple. Besides, we know little about incidence of heart disease among wild gorillas, especially the western lowland subspecies, which accounts for all the gorillas now living in U.S. zoos.

THE **heart** OF THE MATTER

Plan. Their findings were shocking: Heart disease was responsible for 41 percent of adult gorilla deaths in U.S. zoos. Of the animals that had died from heart disease, 70 percent were males. Unlike humans, these animals were not succumbing to atherosclerosis, in which fatty deposits clog the arteries. Something else had damaged their hearts.

At about the same time, two National Zoo veterinarians, Yvonne Schulman and Richard Montali (then the Zoo's head pathologist), published a study of cases they had reviewed. The gorillas had died from fibrosing cardiomyopathy, in which fibrous material replaces healthy heart tissue and blocks electrical impulses that keep the heart beating normally.

Clearly, a systematic effort was needed to find out what was causing the condition and how to treat it. In 2000, two young women stepped up to the task and launched the Gorilla Cardiac Database. They were Hayley Murphy, now chief veterinarian at Zoo Atlanta, and Ilana Kutinsky, a cardiologist now based in Michigan.

The two doctors began asking zoos to include echocardiograms—ultrasounds of the heart—in their routine physical examinations and to submit results to the database. “In order to figure out what was going wrong, we needed to know what a normal heart of a gorilla looked like,” says Murphy. So far, they have collected usable images of

about 330 animals. The National Zoo was an early contributor to this effort, providing valuable data from healthy gorillas as well as Kuja and Mopie. The Zoo's contribution owed a great deal to the work of veterinary cardiologist Steven Rosenthal, a longtime collaborator.

Other research soon followed. The National Zoo began investigating BNP (brain natriuretic peptide), a hormone released from injured heart tissue. It is a marker for heart disease in gorillas, as it is in people. Suzan Murray receives and analyzes blood samples from apes across the country. Her team's goal is to build a database of BNP levels for healthy gorillas, which will help clinicians identify sick animals.

When Murray detects an abnormal BNP level, she alerts the Great Ape Heart Project team. She and they review the blood work and echocardiogram results. They then contact the gorilla's home zoo to recommend appropriate medication. If the animal has already been diagnosed and is on treatment, the BNP test can help monitor how well the meds are working.

“If we can diagnose this illness earlier and start treatment sooner, we'll be better able to halt the progress of the disease and help these animals live a longer and healthier life,” Murray says. A lot of work has gone into the idea of trying not only to characterize the disease but also to create early warning systems.”

“If we can diagnose earlier and start treatment sooner, we'll be better able to halt the progress of the disease and help these animals live a longer and healthier life.”
— SUZAN MURRAY

Looking for Causes

At Cleveland Metroparks Zoo, veterinary epidemiologist Pam Dennis looks for risk factors that might predispose apes to heart disease. “In the wild, gorillas eat high fiber, strictly vegetarian, low-calorie food, but in zoos we often provide a more calorie-dense, smaller-quantity diet, and they also move around less than in the wild,” Dennis says.

Fortunately for the National Zoo, the animal-care team plays a vital role in keeping gorillas healthy. Nutritionists ensure that the animals receive a balanced diet—full of fresh fruit and vegetables. Gorilla keepers then spread the food all around the enclosure, which helps the apes mimic natural, active foraging behavior. This is just one



MEGHAN MURPHY/NZP





MEGHAN MURPHY/NZP

of the 1994 report that first put numbers to the heart disease epidemic in gorillas, studies pathology reports and tissues of apes that have died. Recently, she began requesting and stockpiling whole hearts of all great apes that have died from any cause.

Treating Heart Disease

The good news is that, when diagnosed early, heart disease in apes is often treatable. With the help of medication, the National Zoo's 44-year-old female gorilla Haloko lived comfortably for four months after being diagnosed with severe heart disease.

Currently, about 30 apes in the country are receiving heart medications. Kutinsky has found that two classes of drugs used in humans—ACE inhibitors and beta blockers, both of which relieve stress on the heart by controlling blood pressure—work well in apes. Not only can drugs stop the progression of disease if given early enough, but in some animals there are indications they are actually improving the condition of the heart, Kutinsky says.

So far, drugs are the only treatment option. The advanced pacemaker that was being implanted in Kuja when he died has been used only on one other ape, a gorilla named Babec at the Birmingham Zoo in Alabama. He lived for several years with the device. Unfortunately, the pacemaker had drawbacks. It was very expensive, and installing it took several lengthy operations

requiring highly skilled surgical teams. Babec also had to live apart from the rest of the gorilla group because any chest beating during a confrontation with another animal could damage the pacemaker.

The experts agree that the greatest challenge in preventing and treating heart disease in apes remains determining what is normal. Even though apes are so much like us, scientists still don't know, for example, what is an ape's normal blood pressure or body mass index or cholesterol level. It's not uncommon for gorillas to have cholesterol in the range of 280 to 300, which in humans would warrant medication; yet the animals do not get atherosclerosis.

But it is the mass of data available on humans that is providing clues to heart disease in our closest cousins. "I find it ironic that early on we learned a lot about humans by studying primates," says Pam Dennis. "Now, we're delving into the human literature to try to help these non-human primates."

Wherever sources enrich our knowledge of heart disease in apes, two things are sure. Veterinarians at the National Zoo will play a key role in contributing to our understanding. And they will draw on that learning to help keep the Zoo's magnificent apes healthy and happy. **SZ**

—Freelance writer PHYLLIS MCINTOSH is a longtime Zoo volunteer.

example of the Zoo's collaborative approach to animal care.

Five years ago, researchers decided that they needed general medical information on captive gorillas to really understand what was going on. The result was a broader initiative known as the Gorilla Health Project, which aims to collect complete birth-to-death records on as many animals as possible. Through this program, complete medical records were collected from zoos around the country. They are in the process of being analyzed. The project also helped boost awareness of heart disease, encouraging veterinary teams nationwide to engage in earlier and more advanced diagnostic screening.

Some of the most intense scrutiny apes receive comes after death. Linda Lowenstein, veterinary pathologist at the University of California at Davis and co-author



MEGHAN MURPHY/NZP

This Won't Hurt a Bit!

Luckily, none of the Zoo's current gorillas or orangutans has been diagnosed with heart disease. But vets and keepers remain ever vigilant. During the animals' complete physicals, conducted every two to three years, the vets draw blood for BNP analysis and take radiographs of the chest to assess heart size. A consulting veterinary cardiologist, Steve Rosenthal, attends most routine examinations and performs echocardiograms. These studies help clinicians understand what is normal for apes and promote earlier detection of disease.

The apes are being trained to participate in their own health checks, such as permitting blood draws without the need for anesthesia.

That's an important step for regular monitoring. Staff are constructing a rigid sleeve, designed by Zoo Atlanta vets and Georgia Tech grad students, into which an ape can slip its arm for blood draws and eventually for blood pressure checks.

The animals also are learning to allow vets to perform "awake" echocardiograms. Several of the apes are trained to present their chests up to the mesh of the enclosure so that keepers or vets can touch them with the probe.

As with human patients, there are individual quirks to overcome. Some apes, notably young male gorillas Kojo and Kwame, just can't stand needles. When they see a needle, they jump and move away or bang on their enclosure, reactions that many of us can no doubt identify with.

FONZ RESOURCES

fonz.org

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Special Events
202.633.4470

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Comments? Questions?
Please email us at
fonzmember@si.edu

Not a FONZ
member yet?
Call 202.633.3034
or go to
fonz.org/join.htm

ANNUAL APPEAL UPDATE

Seals and Sea Lions

A new home for seals and sea lions—that was the goal we set for our 2010 annual appeal. To better accommodate these intelligent, charismatic animals, the Zoo is constructing a state-of-the-art habitat, slated to open in 2012.

Built with sustainable materials and construction techniques, the habitat will include wave machines so that animals can swim more naturally and underwater features for them to explore. This new exhibit will be the centerpiece of American Trail, also home to beavers, ravens, river otters, wolves, and bald eagles.

We're grateful to report that you responded generously to our 2010 appeal, contributing nearly \$100,000 toward construction of this important new habitat. Thank you!

It's not too late to contribute! Visit fonz.org/seals.htm to help us finish this groundbreaking project.

**CFC and
United Way
Participants**

If you take part in the Combined Federal Campaign or United Way, please consider designating FONZ as a recipient for your donation.

CFC:
Designate 11434

United Way:
Designate 0967

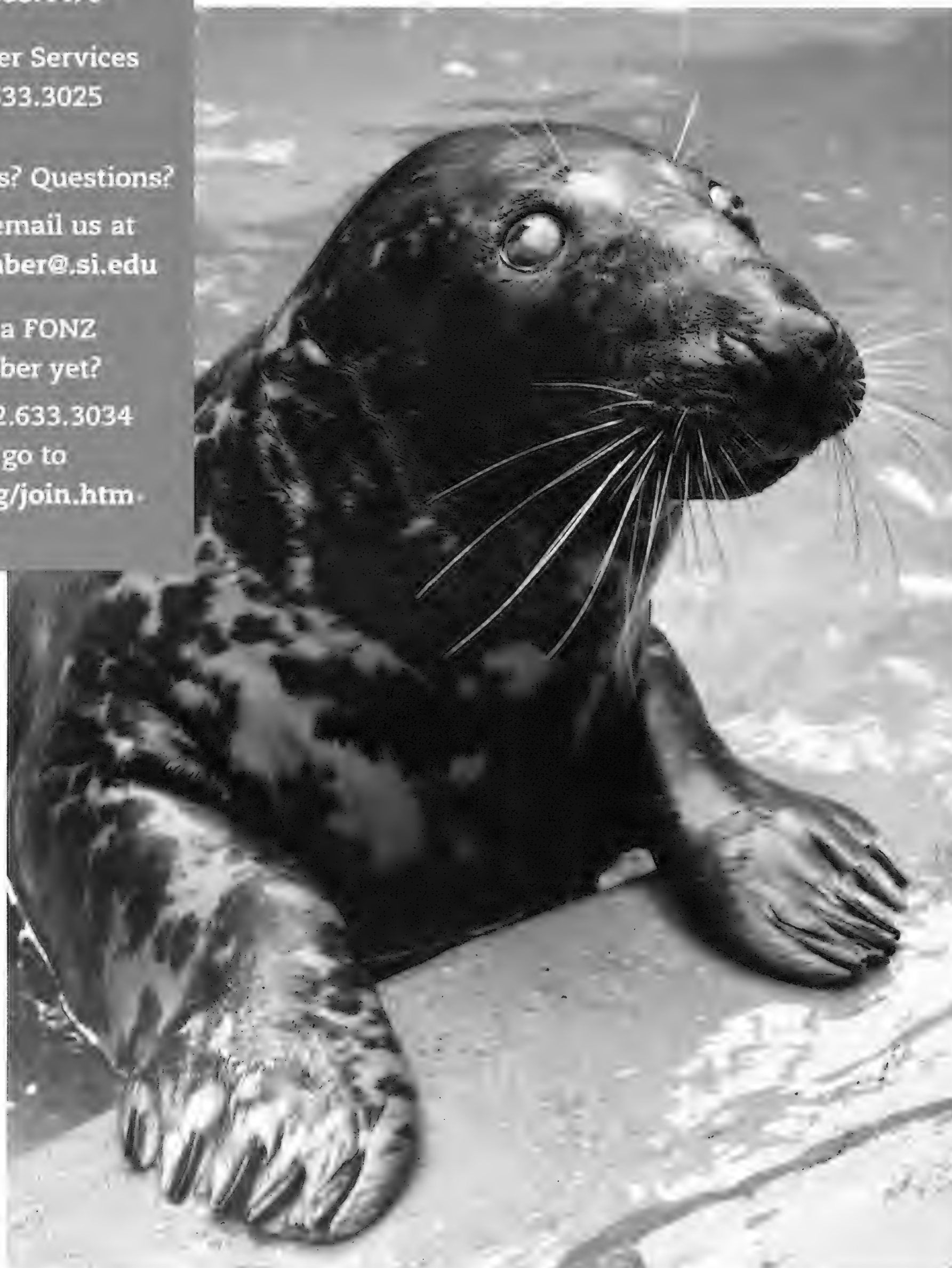
**Thanks to
Our Sponsors!**

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**Build Our New
Carousel!**

Sponsor a scenery panel or an animal figure on our new, conservation-themed carousel. Learn more at fonz.org/carousel.htm.



MEHGAN MURPHY/NZP

WILD GIFTS

for the Holidays

GREAT SHOPPING FOR A GREAT CAUSE

Tired of malls that turn into zoos during the holidays? Then find refuge at stores that know how to handle the wild—the National Zoo shops! Whether you are looking for sophisticated, educational, eco-friendly, fashionable, affordable, or entertaining gifts, you'll find them all at the Zoo and its online store. And your purchase will support the Zoo's vital work of education and conservation.

WILD APPAREL

1) NATIONAL ZOO JACKET

National Zoo Exclusive!

Stylish and comfortable, our new fleece jackets boast laser-cut images of giant pandas. Available in berry or charcoal.

\$36.00 (\$38.00 for XXL)

2) PANDA KNIT HAT

Stay warm and wild this winter with this lined, adult-size hat. Find more animal headgear at fonz.org/shop.htm.

\$16.00

3) GIANT PANDA EAR BUDS

National Zoo Exclusive!

Jazz up your MP3 player with these cool creatures. See more ear bud options at fonz.org/shop.htm.

\$12.00



GAMES AND PUZZLES

4) ANIMALOPOLY

Learn about animals as you make your way round the board.

\$25.95

5) LITTLE CIRCUIT

Kids learn colors as they make their way along the track.

\$23.99

6) LITTLE MEMO

This memory game introduces children to a variety of cute critters

\$23.99

7) 3D SAFARI PUZZLE

Piece together the colorful safari scene, then slip on the 3D glasses (included) for a magical experience. More puzzles available at fonz.org/shop.htm.

\$16.00

8) STACKING MONKEYS

Hone kids' imaginations and manual dexterity as players see how high they can stack the monkeys.

\$20.00

9) MAGNETIC ZOO

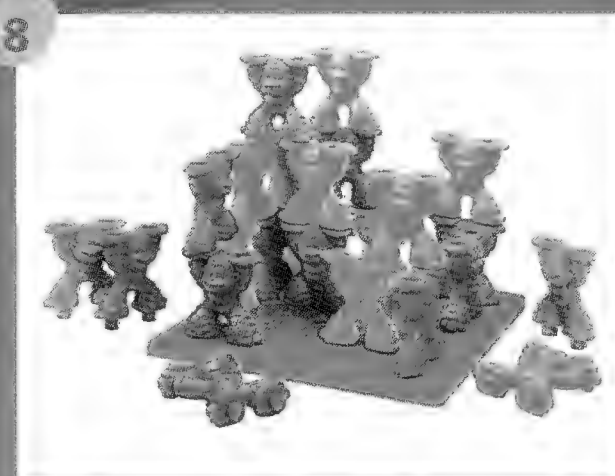
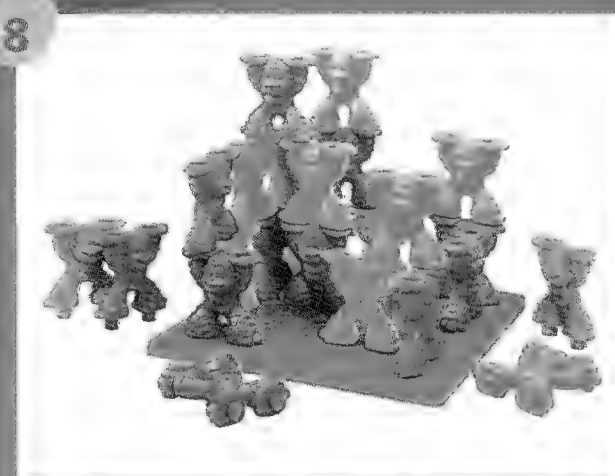
This interactive play set offers hours of imaginative entertainment.

\$9.50

10) ALPHABET ANIMAL BINGO

Learning the alphabet becomes as fun as a trip to the Zoo with this magnetic game.

\$12.00



ANIMAL ORNAMENTS

11) OFFICIAL ZOO ORNAMENT

National Zoo Exclusive!

Crafted in solid brass and finished with 24-karat gold, this ornament depicts three of the Zoo's most popular animals and comes in a beautiful gift box.

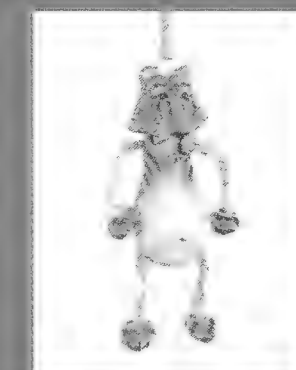
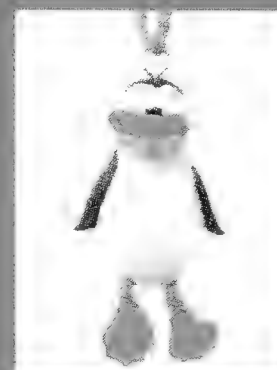
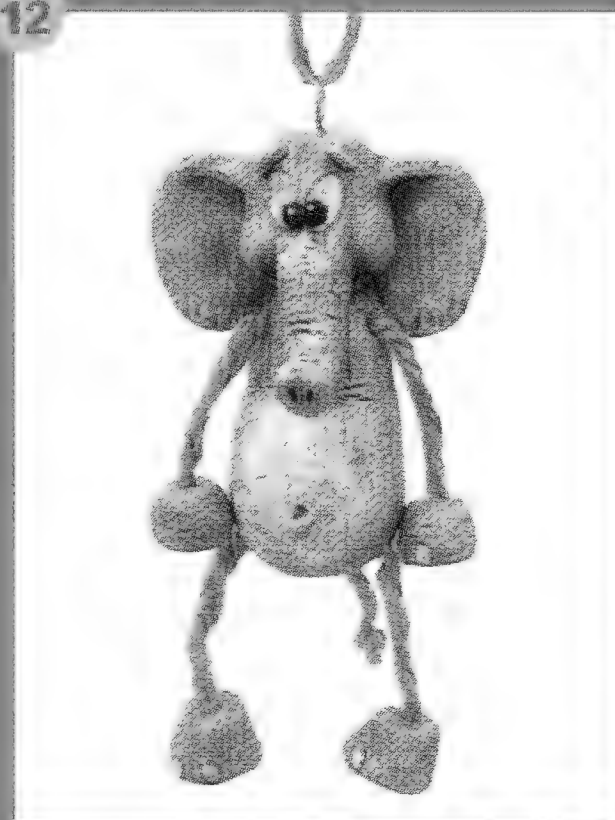
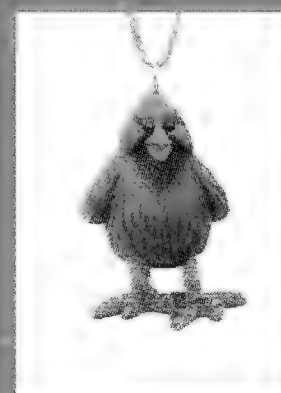
\$18.00

12) HAND-PAINTED CRITTERS

Adorned by hand, this menagerie adds whimsy and warmth to your seasonal décor.

- Cardinal
- Elephant
- Frog
- Giraffe
- Penguin
- Tiger

\$10.00



PLUSH ANIMALS

13) NEW PANDA PLUSH!

You can never have too many giant pandas.

- 9" Panda \$12.00
- 16" Panda \$28.00

14) HELLO KITTY

These adorable toys and bags depict Hello Kitty in a variety of animal guises. Visit fonz.org/shop.htm to see more options.

- 4" Giraffe \$9.95
- 9" Panda \$19.95
- Monkey Backpack \$29.95
- Monkey Shoulder Bag \$19.95

15) WILD WATCHERS

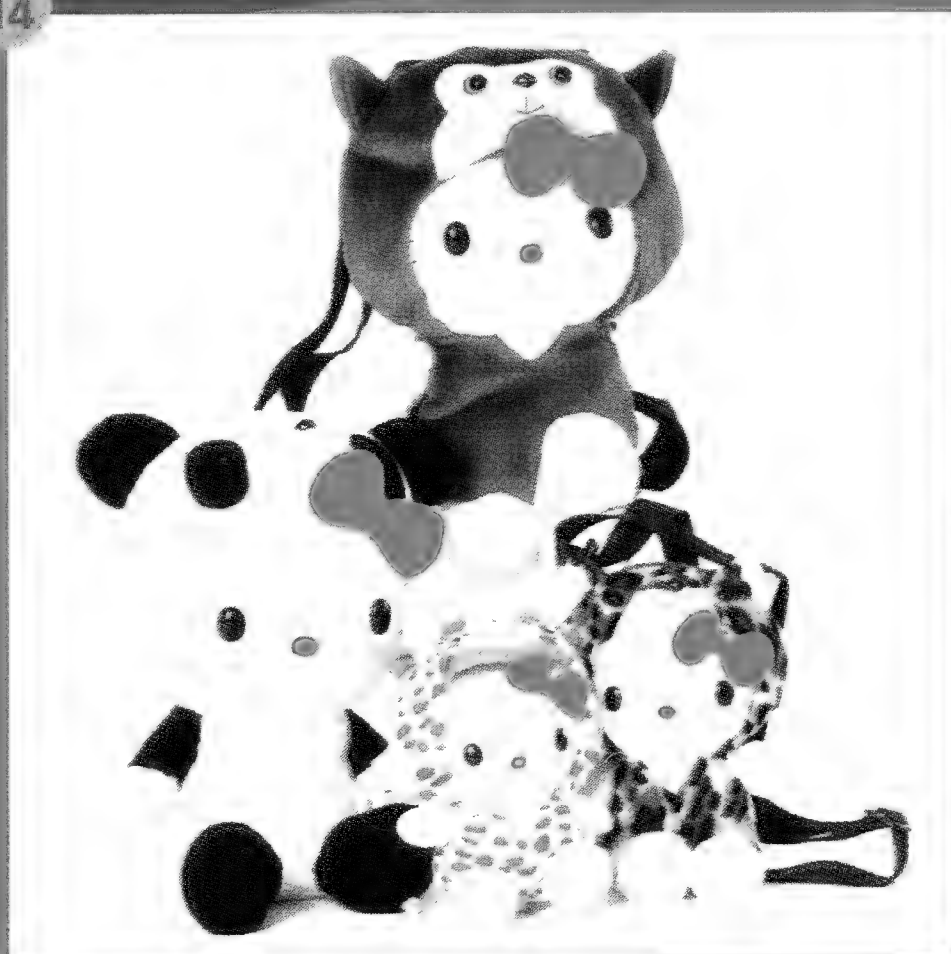
These animals' eyes seem to follow you when you move.

- Giant Panda
 - Red Panda
 - Cheetah
- \$12.00



13

14



16



16) ANIMAL BABIES

Who can resist these soft, cuddly cubs? Find more at fonz.org/shop.htm.

- 8" Lion
 - 8" Tiger
 - 8" Polar Bear
- \$10.00

17) WILD COLORS

Stretch your imagination and embrace these cuddly, neon creatures. See even more at fonz.org/shop.htm.

- 12" Pink Panda
 - 12" Pink Giraffe
 - 12" Green Tiger
- \$15.00

15



17



SHOP IN PERSON

Our Visitor Center and Panda Plaza shops are open every day from 10 a.m. to 4 p.m. and during Zoolights!

SHOP ONLINE

Visit fonz.org/store.htm.

PLUSH ANIMALS

18) CLASSIC PLUSH ANIMALS

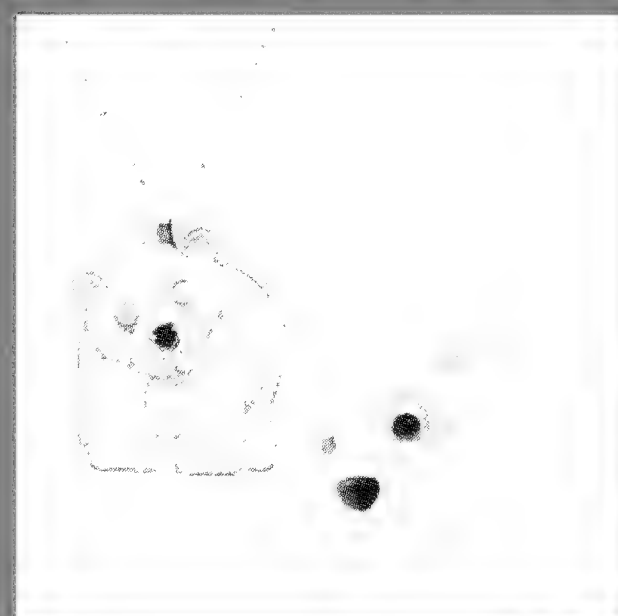
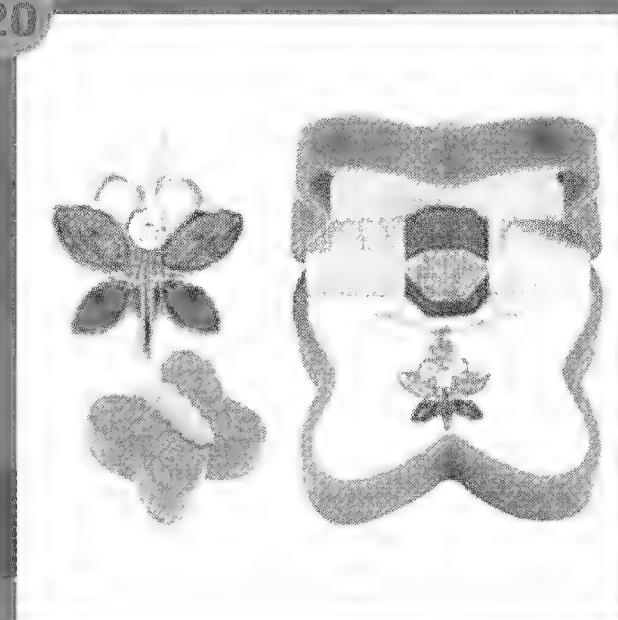
Cultivate interest in wildlife with these beloved beasts.

- 12" Penguin
- 10" Cheetah
- 12" Giraffe
- 12" Tiger
- 12" Zebra
- 12" Asian Elephant
- 12" Red Panda

\$15.00



20



KIDS TREASURES

19) POP-UP WALL ART

Add a wild note to your wall with these masterpieces of paper artistry.

- Tiger
- Elephant
- Lion

\$29.99

20) GOLD NECKLACES WITH KEEPSAKE BOXES

Make a kid's eyes sparkle with genuine European crystals and a sterling silver finish. Each comes in an animal-shaped velour box.

- Giant Panda
- Polar Bear
- Koala
- Butterfly

\$9.00



SHOP IN PERSON

Our Visitor Center and Panda Plaza shops are open every day from 10 a.m. to 4 p.m. and during Zoolights!

SHOP ONLINE

Visit fonz.org/store.htm.



The Zoo's
superstar
lion cubs
celebrated
their first
birthday
this fall.

One Roaring Year

PHOTOGRAPHS BY MEGAN MURPHY

On August 31, 2010, Shera, one of the Zoo's lionesses, gave birth to four cubs. Her pridesmate Naba bore three more, on September 22. The seven bundles of fur and long swirly mesmerized Washington, capturing headlines and luring visitors. This portfolio collects scenes from the young lions' lively first year — a high point in National Zoo history. >> >> >>

One **Roaring** Year



Aww-inspiring

First glimpses of the cubs showed them huddling in their dens.



MEHGAN MURPHY/NZP

First Checkups — A few weeks after each litter

was born, keepers and veterinarians pulled the cubs from the den for their initial examinations. All seven proved healthy.



MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP

Swim Test

A moat encloses the Great Cats exhibit, so cubs had to prove they could cope with water before going outside.



MEHGAN MURPHY/NZP

One **Roaring** Year



MEHGAN MURPHY/NZP

Snow!

Last December brought the cubs a taste of snowfall. The cold chilled neither the cats' spirits nor their curiosity.



MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP

Big Name
Stars from the *Chronicles of Narnia* film series came to the Zoo to name one of the cubs Aslan after the wise, brave lion in the movies.

Cuddly Killers

Roughly half a year old, the cubs proved adept at eating meat, the mainstay of their adult diet.



MEHGAN MURPHY/NZP

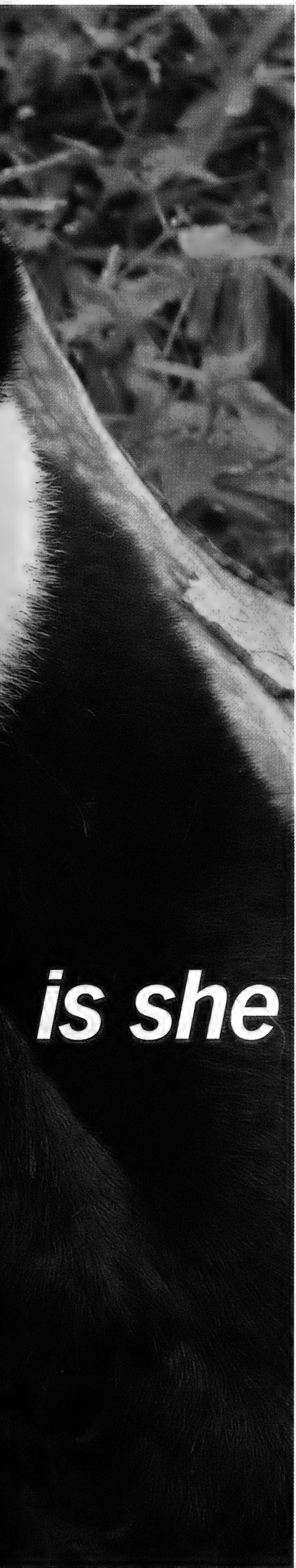


Proud Papa?

Luke, the sire of all seven cubs, often seemed beset by his offspring, but he matched their exuberance with endurance.

MEHGAN MURPHY/NZP





JESSIE COHEN/NZP

is she **OR** *isn't she?*

BY JACKSON BREYER

Knowing
whether
an animal
is pregnant
sounds
simple.
Truth is, it's
anything but.

Late this past January, it was the giant panda Mei Xiang's time of year again. She was in estrus.

Unusual calls echoed in the panda house, and keepers scrambled for urine samples to monitor her hormones. Tian Tian, our male giant panda, noticed too, and the pair made vigorous attempts at mating. But despite the bears' efforts, Zoo staff soon realized they would once again need to artificially inseminate Mei Xiang.

Timing was crucial. Pandas ovulate just once a year, and their reproductive window opens for merely a day or two. Fortunately, scientists at the National Zoo are quite accustomed to this reality, and hormonal analyses allowed them to inseminate Mei Xiang when she was most fertile—on January 29 and 30. With luck, their efforts would yield the Zoo's second panda cub. (The first, Tai Shan, was born in 2005.)

That was the easy part of panda reproduction. Then came the challenge—the waiting. For the next several months, biologists eagerly tracked Mei Xiang's behavior and hormonal data, administering regular ultrasounds in the hopes of confirming her pregnancy. The signs weren't clear, but things looked promising. Mei Xiang built a nest. She slept in it. She became grouchy and picky with her food. The more hopeful among us could almost hear the pitter-patter of tiny panda paws.

Week gave way to week; month followed month. No cub appeared. Mei Xiang's hormones and behaviors returned to normal. On July 21, the Zoo issued a press release. "Researchers have determined," it said, "that Mei Xiang experienced a pseudopregnancy."

is she *OR* isn't she?



Wandu, one of the Zoo's female cheetahs, experienced repeated pseudopregnancies.

have been elevated at the beginning of her third trimester. They were just the opposite. The huge drop in progesterone showed clearly that she was not actually pregnant, despite having shown many signs of being so.

The keepers would then mark her down as having gone through a false pregnancy. It's interesting to note that cheetah false pregnancies don't last for the entire gestation, as the giant panda's does. The times are different because the specific workings of cheetah and giant panda pseudopregnancies are themselves slightly different.

Cheetahs undergo the most common sort of pseudopregnancy, which also afflicts many other species. It's caused by an odd phenomenon called the non-pregnant luteal phase, and it's different from what happens in giant pandas.

When many species ovulate, a follicle in the ovary releases an egg. The egg travels away to be fertilized, and the follicle develops into what's called a corpus luteum (Latin for "yellow body"). This corpus luteum soon begins producing progesterone. That in turn makes the female start to show signs of pregnancy. The longer the progesterone is released, the more pregnant she'll look.

This can have interesting effects in species which have long luteal phases. Even if the egg is not fertilized, progesterone is released for a long duration, and the animal will develop many signs of an advanced pregnancy.

Panda Puzzles

Things work slightly differently for giant pandas. They go through a phenomenon called delayed implantation. The egg pauses for a while in its development before resuming normal cell division. Because of this phenomenon, the corpus luteum shuts down soon after ovulation. Later on, though, the corpus luteum reactivates and produces progesterone—whether or not the panda has conceived. This can cause a pseudopregnancy.

The changes in Mei Xiang's progesterone levels follow a fairly predictable pattern as she progresses through a pregnancy, either true or false. This allows the Zoo to roughly estimate when Mei Xiang will

A Discouraging Word

Pseudopregnancy. That hope-draining word is all too familiar to fans of the Zoo's giant pandas. It's a general condition where an animal shows all the signs of pregnancy—except for the baby. The result is a female who seems pregnant but does not give birth. She can develop a large abdomen, begin nesting, and even lactate; there are just no offspring on the way. For that reason it's also known as false pregnancy.

Pseudopregnancy raises a lot of questions. For starters, why does it happen at all? Being fruitlessly pregnant seems like an inefficient way to spend time. Why is it so hard for biologists to tell a pseudopregnancy from a real one? Even with modern technology, it takes waiting out the gestation to tell if Mei Xiang is actually pregnant. And does this condition occur in other animals, or are giant pandas the only pregnancy pranksters?

To answer the last question first, pseudopregnancy is not unique to giant pandas. It occurs in cats and dogs, among other mammals. Both mice and men (yes,

men) have endured false pregnancies. At the Zoo, this baffling phenomenon arose repeatedly in a cheetah named Wandu.

Feline False Alarms

Wandu bred regularly with a male named Norok, yet their couplings yielded no offspring. Since cheetah pseudopregnancies cause the same symptoms as real ones during the first two months, the staff at the Zoo never quite knew if cubs were on the way. They would prepare each time for the impending birth, only to find their efforts wasted. (The only sure way to figure out if the pregnancy was real would have been to give Wandu an ultrasound or similar procedure. But that requires the patient's cooperation or anesthesia.)

The news that Wandu might not be pregnant would usually come at the beginning of her third trimester, around the 55th day. The clue lay in her progesterone—"the hormone of pregnancy," as Janine Brown, head of the Smithsonian Conservation Biology Institute's endocrinology lab, calls it. If Wandu were pregnant, her progesterone levels would

JESSIE COHEN/NZP

give birth if she is actually pregnant. This obligatory pregnancy or pseudopregnancy happens after every annual ovulation.

That Mei Xiang's hormones aren't noticeably different between regular and pseudopregnancies presents the Zoo's biologists with a significant challenge. If they can't use hormones to determine if she's pregnant, then they must find an alternative way to run a pregnancy test. Unfortunately there aren't many options. That raises the question of ultrasound.

Unlike cheetahs and many other animals at the Zoo, Mei Xiang will usually participate in ultrasounds. Yet they haven't proven especially helpful. Even in 2005, when she gave birth to Tai Shan, Mei Xiang's ultrasounds never revealed any hint of a cub.

There could be many explanations for this. Panda cubs, at birth, are very small—about the size of a stick of butter. Spotting something that size on an ultrasound would be a challenge to begin with, but doing so in

a giant panda is nearly impossible. So while it's worth conducting the ultrasounds for the off chance of seeing something, they're hardly the final word. Unfortunately, the only sure pregnancy test for a panda is to wait and see if she gives birth.

This takes a toll on humans' patience. Almost inevitably, one starts musing: Why would pandas evolve this way? That's a good question, for which unfortunately we have no answer. Some biologists speculate that pseudopregnancy could be nature's insurance, guaranteeing that a female's body is ready if there is actually a cub.

Meantime, Zoo scientists and their colleagues continue to delve into this enigmatic phenomenon, trying to tease out subtle differences between true and false pregnancies. In time, they hope to be able to answer that deceptively simple question: Is she or isn't she? **SZ**

—JACKSON BREYER, *the 2011 summer intern for Smithsonian Zoogoer, is a student at James Madison University.*



JESSIE COHEN/NZP



JESSIE COHEN/NZP



JESSIE COHEN/NZP



JESSIE COHEN/NZP

TOP LEFT: Zoo staff attempt to artificially inseminate Mei Xiang.
BOTTOM LEFT: Mei Xiang cooperates with an ultrasound team.
TOP RIGHT: A veterinary team examines ultrasound images from Mei Xiang.
BOTTOM RIGHT: A curator prepares a slide with material taken from Mei Xiang's vulva.

kids CORNER

BEAST BITS

Historic Hogs

If George Washington visited the Smithsonian's National Zoo, the hogs would look particularly familiar. That's because they're the same kind he had at Mount Vernon. They descend from a herd left by Spanish explorers on Ossabaw, an island near Georgia, in the 1500s. **You can see some Ossabaw Island hogs at the Kids' Farm, sponsored by State Farm®.**

Goat Milk

Chances are, the milk you drink comes from a cow. That's not true for everyone, though. More people drink milk from goats than from cows. People also use goat's milk to make cheese, such as feta.

And some goats' hair is spun into cashmere—a fine, soft wool used in clothing.

No wonder goats are barnyard staples! **You can see goats at the Kids' Farm, sponsored by State Farm®.**



MEHGAN MURPHY/NZP



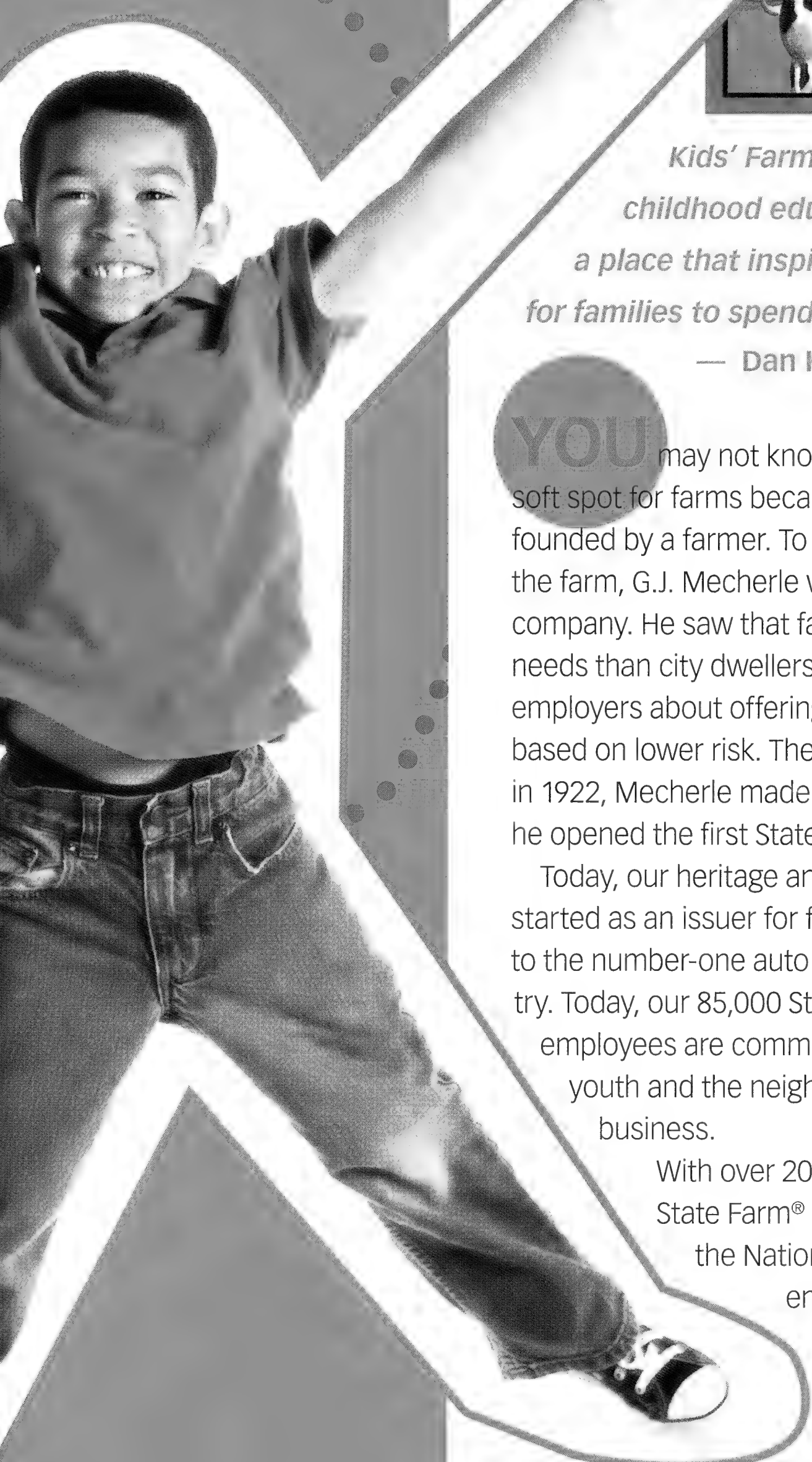
MEHGAN MURPHY/NZP

Zoo Clue

These hairs help an animal avoid danger. How? Learn more at nationalzoo.si.edu/goto/zooclue.



JESSIE COHEN/NZP



Special Message

"At State Farm® we are committed to serving the communities where we work and live, which is why we are thrilled to help fund the

Kids' Farm at the Smithsonian's National Zoo. As strong supporters of early childhood education, we are pleased to give this gift of support to the Kids' Farm; a place that inspires learning in our youngsters while providing a magical experience for families to spend time together."

— Dan Krause, Agency Vice President, State Farm®a

YOU may not know that we have a real soft spot for farms because our company was founded by a farmer. To make ends meet on the farm, G.J. Mecherle worked for an insurance company. He saw that farmers have different needs than city dwellers and approached his employers about offering lower rates to farmers based on lower risk. They dismissed his idea, and in 1922, Mecherle made his vision a reality when he opened the first State Farm Insurance® office.

Today, our heritage and values drive us. We started as an insurer for farmers and have grown to the number-one auto insurer in the country. Today, our 85,000 State Farm® agents and employees are committed to the future of our youth and the neighborhoods where we do business.

With over 200 agents in the D.C. area, State Farm® is a proud neighbor of the National Zoo. Our agents and employees work hard to give back to the communities in which they live because a good neighbor always is

there to help. When the National Zoo announced earlier this year that it would have to close the beloved Kids' Farm due to budget cuts, we saw this as a great opportunity to help our furry, feathered, and finned friends keep their home.

State Farm® is a strong supporter of education. For children growing up in urban areas, cows and goats may be just as exotic as zebras

and elephants. The Kids' Farm is a special place where visitors can groom alpacas, donkeys, and rabbits while learning about where their food comes from. The Kids' Farm provides an interactive learning experience for children in the District of Columbia and all over the world.

We are delighted to lend our support to our neighbors at the National Zoo. We are proud to say, Like a good Neighbor, State Farm is there.™



ALVIN BAITDORF/INZP



**CREATURE
FEATURE**

Alpacas are
found in every
continent
except Antarctica.
They live
on farms
around the
world.

**Have You
“Herd” About
ALPACAS?**

BY PAMELA BUCKLINER

Almost GONE

Alpacas (al-PACK-uhz) are relatives of camels and llamas. Smaller than llamas, they stand about three feet high at the shoulder and weigh up to 175 pounds. They have long necks but, unlike camels, no humps. Alpacas were nearly driven to extinction, with just small herds surviving high in the mountains of Peru, Chile, and Bolivia. Today, though, alpacas have been domesticated and are bred all over the globe for their hair.

GOOD HAIR Day

There are two types of alpacas. One kind has soft, fuzzy hair. The other has long, curly hair. An alpaca's gorgeous locks aren't just for looks, however. Hair keeps the animals warm. It keeps people warm too. For thousands of years, humans have used alpaca wool to make sweaters, coats, and blankets. The wool is superstrong, water-repellent, and lightweight.

MEGHAN MURPHY/NZP



At the ZOO

Come visit the Kids' Farm, sponsored by State Farm®, and meet the Zoo's three alpacas: Cirrus, Ziggy, and Orion.

Survival SKILLS

Alpacas' bodies have built-in survival gear that helps them endure extreme temperatures and altitudes. Their bodies have extra red blood cells, which keep the animal well supplied with oxygen in the thin mountain air. Large lungs also help the animals draw in as much air as possible.

Good GRADES

As farm animals, alpacas earn A's in all subjects. They are easily trained. They don't fight (though they occasionally spit on one another). They share the same spot of land for a bathroom, so cleaning up after them is fairly easy. And they are gentle on farmland.

A+



FURRY Facts

- Ancient Incan societies used cloth woven from alpaca fibers as a form of money.
- To communicate with each other, alpacas make humming noises.
- An alpaca's hair can grow so long that it touches the ground.
- An alpaca's average lifespan is 20 to 25 years.
- Favorite foods of alpacas are grass, hay, and grain.
- Alpacas were first imported into the United States in 1983.

YOUR TURN

Find Out at the Farm!

Pay close attention on your next visit to the Kids' Farm, sponsored by State Farm®, and see if you can find the answers to the following questions.

- 1 What are the cows' names?
- 2 Which animal has its own jungle gym?
- 3 What color is the darkest alpaca?
- 4 What does a donkey use as a flyswatter?
- 5 What kind of animal is Clover?



FONZ CLASSES

Learn at the Zoo!

FONZ classes give children a deeper understanding of animals, their behaviors, and their habitats. Children's classes are open to FONZ members at the household level or higher.

Varying somewhat in structure, classes generally include hands-on activities, crafts, and time in the Zoo. Please note that classes do not include behind-the-scenes visits or direct contact between children and animals. Classes meet in the Visitor Center unless otherwise noted.

Register online at
fonz.org/classes.htm.



JESSIE COHEN/NZP

PRESCHOOL CLASSES

These programs invite adults and children to discover the Zoo together. All children must be accompanied by an adult. For everyone's safety and enjoyment, unregistered children and siblings may not attend—except for infants who do not yet crawl.

THE JUNGLE BOOK

Calling all man cubs! Join the pack and have a wild time encountering our jungle animals. This preschool series is a grrreat way to practice the bear necessities for school. Sing songs, make crafts, and have a swinging time as you learn through play!

AGES: 2-3

DATES: Session 1:
Nov. 7, 14, 28; Dec. 5, 12
Session 2:
Nov. 8, 15, 29; Dec. 6, 13
Session 3:
Nov. 9, 16, 30; Dec. 7, 14
Session 4:
Nov. 10, 17; Dec. 1, 8, 15
Session 5:
Nov. 11, 18; Dec. 2, 9, 16

TIME: 10-11:30 a.m.

FEE: \$125

CONNECTICUT AVENUE

It'll be a sunny day at the National Zoo! So come and play. It's sure to be a great time as we learn letters and numbers and take Zoo walks to see our animal neighbors in this Sesame Street-themed class!

AGES: 3-5

DATES: Nov. 5, 12, 19

TIME: 10-11:30 a.m.

FEE: \$25 each or \$66 for all four.

Nov. 5: Big Bird — Our big birds aren't yellow; they're pink! Flap your wings, stand on one foot, and walk with our long-legged flamingo friends. Today's class is brought to you by the letter F.

Nov. 12: Abby Cadabby — Are you a fairy-in-training? Take this crash course in wand-handling and learn about the magic of butterflies before earning your own wings. Time will fly in this superfun class. This class is brought to you by the number of butterflies you can find.

Nov. 19: Elmo — On Sesame Street, Elmo may be everyone's favorite red, furry creature, but on Connecticut Avenue it's the red panda! Get tickled with excitement as we explore—la la, la la—the red panda's world and visit the newest additions to Asia Trail, our red panda cubs Damini and Pili. Today's class is brought to you by the letter P.

New! BACKYARD BUDDIES

Discover the Zoo in your backyard. We're digging up a good time discovering animals that live close to home. Learn about our feathered, furry, and creepy crawly friends, then head out into the park to see them yourself!

AGES: 2-3

DATES: Nov 10, 17; Dec 1, 8, 15

TIME: 1-2:30 p.m.

FEE: \$125

ANIMALS IN WINTER

Mittens and scarves keep people warm in the winter months, but how do animals prepare for winter? Sing songs and make crafts in our cozy classroom as we explore how the animal kingdom gets ready for the big chill. Then zip up your jacket before investigating further on our Zoo walk.

AGES: 3-5

DATES: Nov 15, 29; Dec 6, 13

TIME: 1-2:30 p.m.

FEE: \$125

CURIOUS GEORGE

Curious about our primate friends? Get to know your animal cousins, from itty-bitty monkeys to awesome apes, through games, craft activities, and Zoo walks. There will be plenty of monkeying around in these classes!

AGES: 2-3

DATES: Dec. 4, 11, 18

TIME: 10 a.m.-12 p.m.

FEE: \$125

Dec. 4: Orangutans — You'll have a swinging good time in this class. Learn about this Asian ape and what you can do to help before heading down to Think Tank to see them for yourself.

Dec. 11: Golden Lion Tamarins — These little guys are the mane event! Watch these Amazonian monkeys scurry throughout the branches of the Small Mammal House and learn how the National Zoo played a role in their survival.

Dec. 18: Gorillas — We're going bananas for gorillas! Join the troop and have an adventure exploring the world of these great apes. See our "little lady," Kibibi, while you're at it.



JESSIE COHEN/NZP

FONZ CLASSES

CHILDREN'S CLASSES

Parents are not encouraged to stay with the class, but may if they wish (for no charge).

THE LION KING

There's no need for a passport when you can explore the savanna at the National Zoo! Take part in crafts and games as you learn about African animals and culture. We're not lion: It's going to be a wild time!

AGES: 4-6

DATES: Nov. 6, 13, 20

TIME: 10 a.m.-12 p.m.

FEE: \$28 each or \$75 for all three.

Nov. 6: Timon — Hakuna matata!

Explore the underground world of tunnels and meet the meerkats that make them their home. Can you dig it?

Nov. 13: Zazu — It's a day with the birds, especially our special hornbill friends! Explore the world of our high-flying pals, then go for a bird watch to see some for yourself.

Nov 20: Simba — We're beaming with pride over the birth of our seven lion cubs. Spend the day learning about our future kings and queens, then enjoy the mane event—a Zoo walk to see the great cats. It's sure to be purr-fect!

New! A BIKINI BOTTOM VACATION

Are you ready, kids? Escape the chill with a trip to Bikini Bottom! Spend time with Sponge Bob's crazy friends while learning about life below the ocean's waves.

AGES: 7-9

DATES: Nov. 6, 13, 20

TIME: 10 a.m.-12 p.m.

FEE: \$28 each or \$75 for all three.

Nov. 6: Patrick Starfish

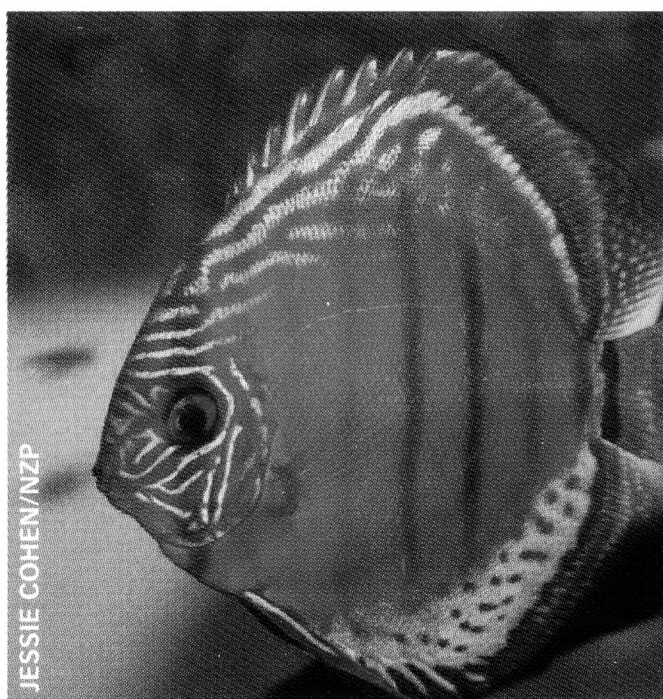
You don't have to go to the theater to see our stars! They may not be as famous as Patrick, but they're just as interesting. Make a point to attend this class and learn about our sea stars.

Nov. 13: Mr. Krabs — Don't get crabby! Week 2 is for our pinchy little friend, Mr. Krabs! His personality may be a little hard to crack but it'll be easy to love this class!

Nov. 20: Gary the Snail — Snails and their habitats are the topic for today, but don't you worry. There's nothing slow about this class. It's all about Sponge Bob's best friend and the world they both live in. Dive on in!



MEGHAN MURPHY/NZP



JESSIE COHEN/NZP

THE SCIENCE KIDS

We're taking on the BIG questions! Ask questions and try to find answers—just like a real scientist. Work, play, and investigate together with your classmates, learning great school skills while having fun. It's just like being on an episode of *Sid the Science Kid* but at the Zoo. What could be better? This month's topic: Tools and Measurements

AGES: 4-6

DATES: Dec. 3, 10, 17

TIME: 10 a.m.-12 p.m.

FEE: \$28 each or \$75 for all three.

Dec. 3: Observation — We're looking at the big picture here! What do we see and what can you do to see even more? Learn how to use magnifying glasses and microscopes to make your own observations and take the first step in becoming a scientist.

Dec. 10: Estimation — How many ants are in the colony? They won't sit still to be counted, so scientists have other ways of answering the question. Have fun as you learn some new ways of looking at things.

Dec. 17: Measurement — How big is an elephant? Find out for yourself as we explore the many ways to measure objects. We're sure this class will size up to the rest!

New! THE NATIONAL ZOO SHOW

It's time to see the animals. It's time to watch the prey. It's time to get things started at the National Zoo today! Meet the animal critters of *The Muppet Show* and make your own puppets each week. Then meet their real-life counterparts.

AGES: 7-9

DATES: Dec. 3, 10, 17

TIME: 10 a.m.-12 p.m.

FEE: \$28 each or \$75 for all three.

Dec. 3: Kermit the Frog —

Hi ho! It may not be easy being green, but you'll be hoppy taking this class. Leap to it and register today!

Dec. 10: Miss Piggy — You'll go hog-wild over this class. Read a pig tale, make some curly crafts, and be tickled pink. We're "sow" excited. Don't miss it.

Dec. 17: Fozzie Bear — "What animal hibernates standing on its head? Yoga Bear!" Wocka! Wocka! Wocka! We're laughing our way through the Zoo and seeing some of our favorite bears. We can bear-ly contain our excitement.

HOMESCHOOL CLASSES

Interested in a more personalized homeschool experience? We're happy to work with you and your homeschool group to create the perfect visit! Programs on a variety of topics are available for ages 5-11+. Visit fonz.org/homeeducation.htm to learn more.



MEGHAN MURPHY/NZP

AFTER-SCHOOL PROGRAM

Sign up your cub for the club! Our new after-school program draws on Maryland, Virginia, and D.C. science standards to offer an extension to classroom lessons.

New! ZOO SCIENCE INVESTIGATORS

Join the ZSI! Each week, you'll explore a different wild topic as you hang out with other cool cats who enjoy science and animals.

Nov.-Dec.: Habitat, Sweet Habitat — *Extreme Home*

Makeover has gone wild! Discover the many types of homes created by different members of the animal kingdom. Whether it's a beaver's lodge, a bird's nest, or a naked mole-rat's burrow, investigate where the wild things are! (Note: Due to winter conditions, viewing of animals will be limited.)

DATES: Grades 2-3:

Nov 7, 14, 28; Dec 5, 12

Grades 4-5:

Nov 8, 15, 29; Dec 6, 13

TIME: 4-5:30 p.m.

FEE: \$75



MEHGAN MURPHY/NZP

Enduring Image

Since joining the Zoo staff in 2006, photographer Meghan Murphy has shot countless images. One that stands out as she departs for new adventures on the West Coast is her 2008 picture of Luke in the snow. This classic photo won an Association of Zoos and Aquariums competition—along with the hearts of all who’ve seen it in Zoo publications. We reprint it here in thanks for Murphy’s boundless contributions to *Smithsonian Zoogoer*, and we wish her all the best!

Technical Notes — Canon EOS 1D Mark III;
ISO: 400; EXPOSURE: 1/125 second at f/8

Smithsonian Zoogoer

welcomes FONZ members’ submissions of photos taken at the Zoo. Please send photos to **Zoogoer@si.edu**. We will contact you if we are able to use your picture for the Zoo View page.

TWICE AS NICE!

GIVE THE GIFT THAT GIVES BACK.

A FONZ membership makes a great gift for anyone on your list. Along with helping to conserve wildlife, recipients get great benefits like free parking, discounted tickets to special events, invitations to members-only events, and much, much more. This year's holiday membership includes an exclusive FONZ Panda Pal Tote bag. Order your gift membership today at fonz.org/giftmembership.htm.



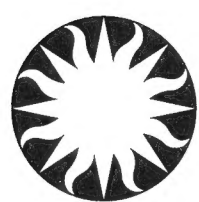
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No matter what you call your troop, Adopt A Species makes a great gift for every member of the pack. Special holiday packages are now available and consist of one 12" plush and two baby 8" plush of the same species. Choose from: Lions, Pandas, or Red Pandas. Holiday Adopt Packages are \$75.00 each and in addition to the animals include a gift box, personalized certificate of Adoption, fact sheet, and photo. **Order online today at fonz.org/adopt.htm.**



Friends of the National Zoo, PO Box 37012, MRC 5516, NW, Washington, DC 20013-7012, www.fonz.org



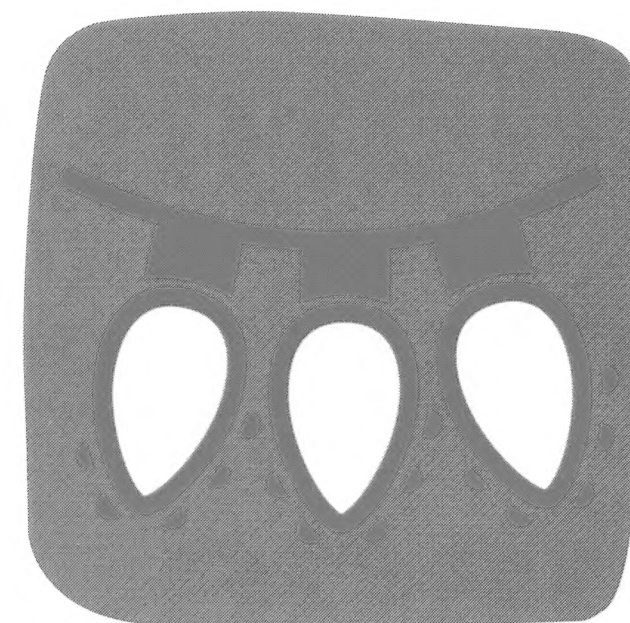
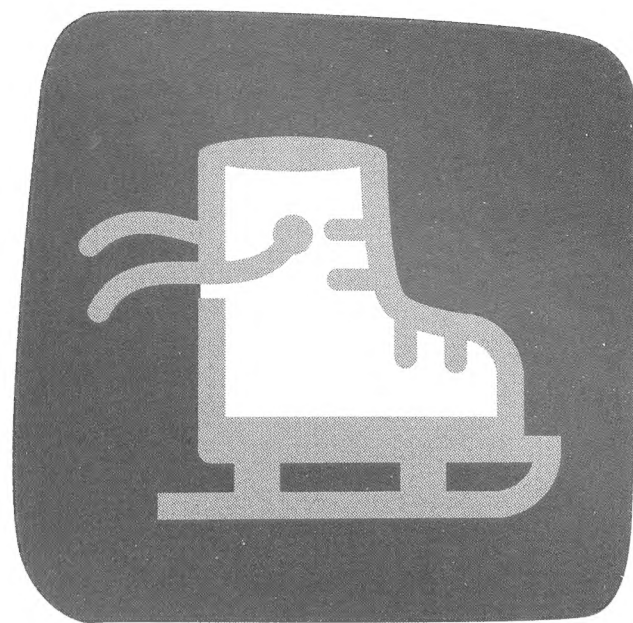
Smithsonian
National Zoological Park

Thank you for joining FONZ.

Your membership supports animal care, science, conservation, and more.



Winter Necessities



Enjoy them all at ZooLights! Beginning November 25, all of your favorite holiday activities are available at the Smithsonian's National Zoo. Everything from animated light displays, seasonal food and drink, live entertainment, holiday shopping, and, of course, exotic animals—both live and in lights. New in 2011—an eco-friendly iceless skating rink! Visit fonz.org/zoolights.htm for dates, times, and schedules. Event parking is available at a discount for FONZ members. Best of all, **ADMISSION IS STILL FREE!**

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ZooLights
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